

Appl. No. 10/806,818  
Response to Notice mailed June 28, 2006

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**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application.

**Listing of Claims:**

**Claim 1. (original)** An ink for ink jet comprising:  
a first solution containing a solvent which is polymerizable in the presence of an acid and a colorant dispersed in said solvent;  
and

a second solution containing a photo-acid generating agent which is capable of generating an acid as it is irradiated with light and prepared separate from said first solution, said second solution being preserved separate from said first solution.

**Claim 2. (original)** The ink according to claim 1, wherein said first solution further comprises a basic compound and/or a basicity-adjusting compound.

**Claim 3. (withdrawn)** An ink jet recording apparatus

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comprising:

a color ink container having a capacity V1 accommodating therein a solvent which is polymerizable in the presence of an acid and a colorant dispersed in said solvent;

a reaction liquid container having a capacity V2 ( $V2 < V1$ ) accommodating therein a reaction liquid comprising a solvent, and a photo-acid generating agent which is dissolved in said solvent and capable of generating an acid as it is irradiated with light;

a stirring container mixing said color ink and said reaction liquid at a mixing ratio of S1:S2 (said color ink : said reaction liquid) to prepare a recording ink;

a color ink supply means feeding said color ink from said color ink container to said stirring container;

a reaction liquid supply means feeding said reaction liquid from said reaction liquid container to said stirring container;

an ink jet recording head ejecting said recording ink to a recording medium; and

a supply tube feeding said recording ink to said recording head.

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**Claim 4. (withdrawn)** The ink jet recording apparatus according to claim 3, wherein said reaction liquid container is kept at a temperature lower than that for keeping said color ink container.

**Claim 5. (withdrawn)** The ink jet recording apparatus according to claim 3, further comprising a cooling fan for cooling said reaction liquid container.

**Claim 6. (withdrawn)** The ink jet recording apparatus according to claim 3, wherein a ratio between a capacity (V2) of said reaction liquid container and a capacity (V1) of said color ink container ( $V2 < V1$ ) is smaller than the mixing ratio ( $S2/S1$ ) between said reaction liquid and said color ink in said stirring container.

**Claim 7. (withdrawn)** The ink jet recording apparatus according to claim 3, further comprising an image data-storing/processing device, a recording ink residue-detecting monitor detecting the quantity of residual recording ink

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remaining inside said agitating container, and a control device, wherein image information and residual ink information are fed respectively from said image data-storing/processing device and said ink residue-detecting monitor to said control device, said image information and said residual ink information being subsequently fed to said color ink supply means as well as to said reaction liquid supply means.

**Claim 8. (withdrawn)** The ink jet recording apparatus according to claim 3, wherein said color ink and said reaction liquid are fed to said stirring container at a ratio enables said recording ink to contain said photo-acid generating agent at a ratio of 1 to 20% by weight.

**Claim 9. (withdrawn)** The ink jet recording apparatus according to claim 3, wherein said color ink further comprises a basic compound and/or a basicity-adjusting compound.

**Claim 10. (withdrawn)** The ink jet recording apparatus according to claim 9, wherein said color ink contains a basic

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compound and/or a basicity-adjusting compound at a ratio of 0.1 to 0.8% by weight.

**Claim 11. (new)** The ink according to claim 1, wherein the solvent contained in the first solution has a viscosity of 30 mPa•s or less under the conditions of ordinary temperature and atmospheric pressure, said solvent having a boiling point of 150°C or more.

**Claim 12. (new)** The ink according to claim 1, wherein the solvent contained in the first solution has a molecular weight of not more than 1000.

**Claim 13. (new)** The ink according to claim 1, wherein the solvent contained in the first solution has a cyclic ether group.

**Claim 14. (new)** The ink according to claim 13, wherein the cyclic ether group is selected from the group consisting of an epoxy group, an oxetane group and an oxolane group.

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**Claim 15. (new)** The ink according to claim 14, wherein the solvent contained in the first solution comprises an oxetane compound having an oxetane group.

**Claim 16. (new)** The ink according to claim 15, wherein the oxetane compound is in an amount of 10 to 40 parts by weight based on the entire amount of the solvent.

**Claim 17. (new)** The ink according to claim 12, wherein the solvent comprises a vinyl ether compound.

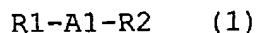
**Claim 18. (new)** The ink according to claim 1, wherein the solvent contained in the first solution comprises an aliphatic skeleton.

**Claim 19. (new)** The ink according to claim 1, wherein the solvent contained in the first solution comprises a low viscosity compound having a viscosity of 1 cP to 30 cP and a high viscosity compound having a viscosity of 20 cP to 500 cP.

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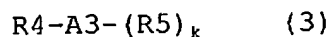
**Claim 20. (new)** The ink according to claim 18, wherein a weight ratio of the low viscosity compound to the high viscosity compound is 1:1 to 10:1.

**Claim 21. (new)** The ink according to claim 18, wherein the low viscosity compound is selected from the group consisting of a compound represented by the following formula (1) and a compound represented by the following formula (2):



wherein, R1, R2 and R3 individually represent an epoxy group or an epoxy group having an alicyclic skeleton; and A1 and A2 each represent a functional group.

**Claim 22. (new)** The ink according to claim 18, wherein the high viscosity compound is represented by the following formula (3):



wherein R4 and R5 individually represent an epoxy group or an epoxy group having an alicyclic skeleton; and A3 represents a

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(k+1)-valent functional group, wherein k is natural number, said A3 having at least an alkylene group and/or an alicyclic skeleton.

**Claim 23. (new)** The ink according to claim 1, wherein the colorant contained in the first solution is selected from the group consisting of a pigment and a powder.

**Claim 24. (new)** The ink according to claim 23, wherein the colorant has a diameter which is not larger than 0.35  $\mu\text{m}$ .

**Claim 25. (new)** The ink according to claim 1, wherein the first solution further comprises a basic compound and/or a basicity-adjusting compound.

**Claim 26. (new)** The ink according to claim 1, wherein the first solution further comprises a radically polymerizable compound.



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**Claim 27. (new)** The ink according to claim 1, wherein the photo-acid generating agent contained in the second solution is selected from the group consisting of an onium salt, a quinone diazide compound, an organic halide compound, an aromatic sulfonate compound, a bisulfone compound, a sulfonyl compound, a sulfonate compound, a sulfamide compound and a sulfonyl diazomethane compound.

**Claim 28. (new)** A method for ink jet recording comprising:  
discharging an ink according to claim 1 from an ink jet head on a recording medium to form an ink layer:

discharging an ink according to claim 1 from an ink jet head on a recording medium to form an ink layer;

irradiating a light to the ink layer thereby generating an acid in the ink layer; and

heating the ink layer to promote a crosslinking reaction wherein the acid functions as a catalyst, thereby obtaining an image.